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Abstract
Emoticons have been widely used in Computer mediated communication (CMC) such as Instant Messenger (IM). This study investigates the effect of communication task, interpersonal perception, and relationship intimacy on the use of emoticons in IM. The results show that task formality and two aspects of interpersonal perception affect the emoticon usage. Detailed discussions and implications are addressed.

Keywords: Computer Mediated Communication, Instant Messenger, Emoticons.

Introduction

Computer mediated communication (CMC) provides opportunities to communicate in both synchronous (instant messaging, Internet Relay Chat (IRC)) and asynchronous (e-mail, discussion boards, bulletin boards) ways. This study focuses on instant messenger (IM) which offers two functions unique to CMC: the ability to know who is connected to the shared space and the ability to conduct a text-based conversation in real time (Hu et al. 2004). IM can thus be administered in one-on-one or in group communication settings, combining features of the telephone, e-mail and chat rooms into one (Nardi et al. 2000). It is regarded as one of the most popular online applications, dramatically increasing Internet connection time worldwide.

Early research argues that text-based forms of CMC lose nonverbal cues such as facial expressions, gestures or tone of conversation (Daft and Lengel 1984; Kiesler 1986; Rice and Love 1987; Culnan and Marcus 1987). However, more recent research argues that communicators can use *emoticons* to express nonverbal cues (Walther 1992; Thompson and Foulger, 1996; Walther and D'Addario 2001). *Emoticon*, also known as *smiley*, is derived from the hybrid of "emotion" and "icons", and is either composed of punctuation characters or of graphical symbols (Huffaker and Calvert 2005). As online interactions lack the facial expressions and body gestures vital to expressing opinions and attitudes, emoticons were introduced to fill a void in online communication (Crystal 2001). Common examples of punctuation character emoticons are happy face :-) and sad face :-(; and the corresponding graphical ones are  and  . This study focuses on the use of graphical emoticons.

Although emoticons might seem like bits of electronic pop culture, they reflect an interesting by-product of electronic textual technologies-the reconciliation of the oral and written. The writer of an emoticon wants the reader to enact an oration, complete with gestures, asides,

and facial expressions. These nonverbal cues help communicators in the exchange of emotions and also enhance the message content (Thompson and Foulger 1996; Rezabek and Cochenour 1998; Walther and D'Addario 2001). They also help to form impression of the sender's disposition or attitude. For instance, in a study of chat room moderators, the use of emoticons caused the moderators to be perceived as more "dynamic", "valuable", "talkative", and "friendlier" than those who did not use emoticons (Constantin et al. 2002).

The helpfulness of emoticons is supported by Walther's (1992) social information-processing theory. It argues that users develop skills to decode textual cues to form interpersonal impressions. For example, by using emoticons to indicate a smile, some limitations of CMC may be overcome. Individuals are able to form impressions, gain interpersonal knowledge, and develop relationships solely through the interaction. The ability to express emotions in text and self-presentation are very important for a social and friendly atmosphere, leading to the development of friendship. In other words, emoticons add information richness into CMC, a supposedly lean media (Daft and Lengel 1984).

In spite of these arguments, little research has directly addressed emoticon usage in IM. This study thus continues where others left off by adopting a relationship management perspective so as to effectively manage the communication between the three key participants of CMC, i.e., task (the context of communication), technology (the emoticons), and people (the communicators).

"Task" and "people" factors have been recognized as two important moderators of online user behavior (Beatty and Smith 1987). On the one hand, research suggests that emoticon usage in CMC differs between task-oriented contexts and socio-emotional contexts (Derks et al. 2003). Brown et al. (2004) also contend that communication nature, i.e., task or social, is an important factor to consider when we examine CMC usage. They call for future research on various CMC applications such as synchronous messaging together with the nature of communication. Hence, this study investigates the effect of task formality on emoticon usage in IM.

On the other hand, "people" factors such as interpersonal personality perception and relationship may influence the emoticon usage as well. The rationale of interpersonal perception is that people have to perceive something about the interaction partner in order to know whether they should respond to them, trust them, or befriend them (Markey and Wells 2002). In a study on web chatting rooms, Markey and Wells (2002) regard interpersonal perception as the personality judgment of the interaction partner, which can be formed through the interactions between the communicators on various topics (e.g., work or life, public or private issues) and the way the partners present themselves (e.g., the use of emoticons, the speed of response or their sentence structure). Ho and Vathanophas (2003) examine the influence of personality traits on online discussion and find that group members' personality traits affect the process and outcome of the discussion. Hence, we expect that emoticon usage in IM communications is also influenced by interpersonal perception, i.e., how the sender perceives the receiver's personality.

In addition, sender-receiver relationship may play a role here as well. Many studies have examined IM use on individual level (e.g., Leung 2001; Schiano et al. 2002) but seldom taken into account the relationship between communicators. Hence, this study involves a concept of central importance in human relationship, intimacy (Fisher and Stricker 1982), and investigates its effect on emoticon usage in IM.

This paper is organized as follows. We first review relevant literature and propose hypotheses regarding the three aspects related to emoticon use. Research method is then described, including the survey design and data analysis. Finally, results are discussed and implications are addressed.

Literature Review and Hypotheses

Trends show that IM users are indeed increasingly turning to emoticons to supplement the lack of visual and aural cues (Ogan 1993; Walther 1992). Fulk et al. (1987) apply social information processing theory to the use of communication within organizations and assert that the selection of media is dependent on the relationship between a medium and usage circumstances. By referring to previous research, we propose three factors which would possibly affect emoticon usage in IM: task formality, sender-receiver relationship and perceived receiver personality. The research model is presented in Figure 1. In the sections below, we will present relevant studies and explain the relationship between each independent and dependent variable.

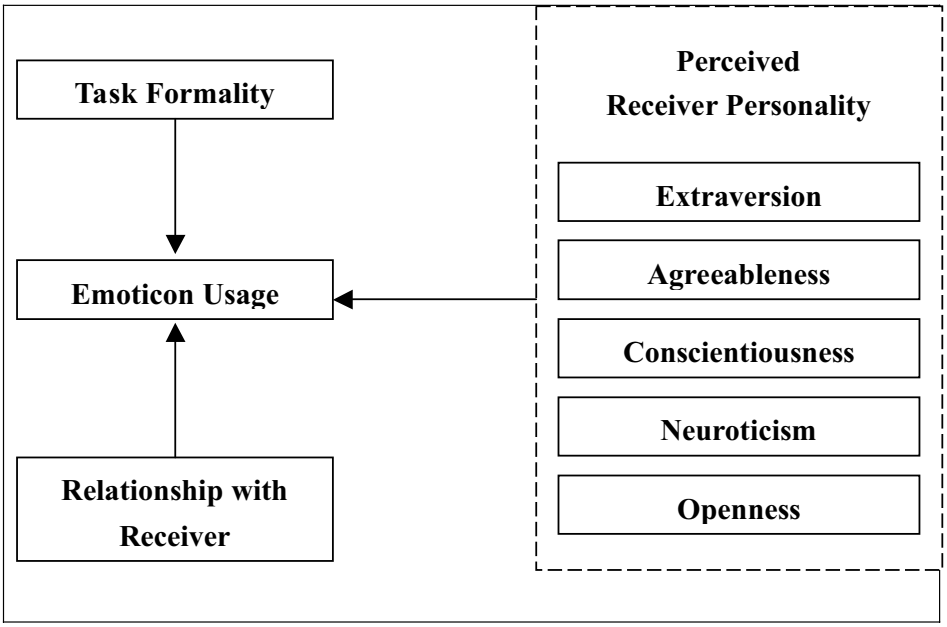

Figure 1: Research Model

Task Formality

Broad communication functions are usually classified as either task-oriented or social-emotional (Bae 1995; Derks et al. 2003). In this study, we term it task formality. In task-oriented context, communicators raise their opinions on a professional task such as how to write a course report. In socio-emotional context, communicators talk about a social or casual issue such as how to spend a vacation. There are several differences between these two types of tasks.

For task-oriented talk, communicators usually focus on a concrete objective they need to achieve. They prepare carefully for the discussion in order to achieve an outcome in time. Hence, the discussion process is outcome-oriented, involving more of information exchange on the work on hand. Emotional exchange is usually minimal so that unnecessary information such as emoticons on the screen may give people an excessive cognitive load. In other words, rather than being a positive information source, emoticons serve as a distraction and a noise source due to the information they convey and the vivid presentation. This is certainly not

desirable in working environment. Hence, it is unlikely that communicators will make frequent use of emoticon in this context.

On the contrary, social-emotional talk usually takes place in a relaxing atmosphere and involves a lot of emotional exchange between communicators. In many cases, these talks do not have a formal objective to achieve or the outcome does not have specific or strict requirement. In other words, people enjoy the process of communication more than the outcome. Hence, in this case, emoticons contribute in conveying emotions between communicators and are unlikely to pose attention distraction problem due to the nature of the communication. Therefore, we propose,
H1: One will use more emoticons if the IM communication is a social-emotional talk than a task-oriented talk.

Relationship: the Sender-Receiver Intimacy

So (1997) points out that different levels of interpersonal intimacy appear in CMC. Intimacy is a very complex and heterogeneous concept that has generated a variety of definitions. In this study, we define it as "the sharing of one's innermost being, or essence, such as strength and vulnerability, weakness and competence, with another person." It is a warm, close, and communicative relationship with one person in particular (e.g., Erber and Erber 2001; Frank 1996; Lerner 1990; McAdams 1989; Piorkowski 1994). It can be thought of along three dimensions of relationships: influence, trust and friendship (Cross et al. 2001). Organizational research has shown that employees seek help from members that they interact with frequently because they have developed a trusting relationship which allows them to share innovative information (e.g., Albrecht and Hall 1991; Cross and Borgatti 2001). Studies have also found a positive relationship between relational intimacy and similarity of attitudes and behavior toward a particular information technology (e.g., Burkhardt 1994; Contractor et al. 1996). Hence, the more intimate the receiver is with the sender, the more likely that the sender is willing to express his/her emotion during the communication and the more likely that emoticons, as facilitator of conveying information, will be utilized and accepted by both parties.

On the contrary, if there is a low level of intimacy between the communicators, the sender may not care about expressing or sharing his/her feelings accurately. Furthermore, research has shown that there are still many emoticon "hypocrites". These are the people who get a sense of irritation when they see emoticons, especially the animated ones, hanging around in their conversation. This may become a major concern of the sender if he/she has low level of intimacy with the receiver. Since he/she is not sure about the receiver's reaction, he/she may not want to risk their current relationship. This prevents the sender from using emoticons frequently. Therefore, we propose,
H2: One will use more emoticons if he/she has a higher level of intimacy with the receiver in IM communications.

Perceived Receiver Personality

Perceived receiver personality refers to one's subjective judgment on the personality traits of the receiver. We study the influence of perceived receiver personality on one's emoticon usage, because people act and respond according to the personality judgment of the interaction partner in interpersonal conversations (Markey and Wells 2002).

Personality is defined as "a pattern of characteristic thoughts, feelings, and behaviors that distinguishes one person from another and that persists over time and situation" (Phares

1991). As a stable characteristic of a human being, personality is viewed as an important predictor and determinant of what people will produce under certain conditions, such as online discussions (Ho and Vathanophas 2003). Past studies have used different taxonomies of personality. Among them, the most widely accepted one is the five-factor model (Costa and McCrae 1992), which consists of five major personality traits, namely, extroversion, agreeableness, conscientiousness, neuroticism and openness. The extraversion-introversion dimension contrasts an outgoing character with a withdrawn nature. Extraverts tend to be more physically and verbally active whereas introverts are independent, reserved, steady and like being alone. The agreeableness scale is linked to altruism, nurturance, caring and emotional support versus competitiveness, hostility, indifference, self-centeredness and spitefulness (Howard and Howard 1995). Conscientiousness is a measure of goal-directed behavior and amount of control over impulses. The focused person concentrates on a limited number of goals but strives hard to reach them, while the flexible person is more impulsive and easier to persuade from one task to another (Howard and Howard, 1995). Neuroticism is a measure of affect and emotional control. Low levels of neuroticism indicate emotional stability whereas high levels of neuroticism increase the likelihood of experiencing negative emotions (Howard and Howard 1995). Openness is a measure of depth, breadth and variability in a person's imagination and urge for experiences. People with a high openness to experience have broad interests, are liberal and like novelty, while the preservers with low openness to experience are conventional, conservative and prefer familiarity (Howard & Howard 1995). Table 1 shows the personality dimensions and the poles of traits they form.

In the context of emoticon usage, people of different personality traits would have different attitude and reactions towards that. On one hand, one's emoticon usage would be influenced by his/her personality. On the other hand, in order to lead the conversations towards the right direction or maintain an intended relationship with the partner, one would consider the partner's attitude and reactions to emoticons and adjust his/her emoticon usage. Hence, we expect some personality traits of the receiver would encourage the sender's emoticon usage in IM conversations, while others would discourage such usage. Since this study aims to investigate the role of interpersonal perception on one's emoticon usage behavior, we focus on the influence from perceived receiver personality rather than one's own personality. The following discussion of personality and emoticon usage is from this perspective.

Table 1: Personality Dimensions and The Poles of Traits
(Based on Costa & McCrae 1992)

Personality dimensions	High level	Low level
Extroversion	outgoing, physical-stimulation-oriented	withdrawn, physical-stimulation-averse
Agreeableness	affable, friendly, conciliatory	aggressive, dominant, disagreeable
Conscientiousness	dutiful planful, organized	spontaneous, flexible, careless
Neuroticism	emotionally reactive, prone to negative emotions	emotional stability, calm, unperturbable, optimistic
Openness	Inventive, curious, open to new ideas and change	conservative, cautious

Emoticons are used in online conversations for three major reasons: they can accentuate or emphasize a tone or meaning of the message (Crystal 2001; Huffaker and Calvert 2005); they can establish the current mood or impression of the sender (Constantin et al 2002); and they can make the otherwise completely textual conversation creative and visually-salient (Crystal 2001, Huffaker and Calvert 2005). Hence, it is likely that emoticons are especially welcome by IM participants who are expressive, outgoing, flexible and open to new ideas or changes.
However, emoticons may also be unwelcome and annoying. The first reason stems from the interpretation of emoticons. In general, there is a broad acceptance in the interpretation of the basic emoticons (i.e., smiley, frowney, and winkey emoticons respectively represent humor, sadness, and sarcasm). However, nowadays more static or animated emoticons are personalized, so that different persons can give them different meanings, bringing in some confusion. The more elaborate emoticons become, the greater variation in its interpretations (Riva 2002). If the emoticon can not be easily understood by the receiver, it would be interrupting and annoying. The second reason is regarding the overuse of emoticons. Too many emoticons used in a conversation or a sentence can be quite intrusive, as they block the flow of reading and bring visual unease to the receiver (Harishankar 2006). Moreover, receiving and displaying a number of emotions may sometimes slow down the web system, or even result in a crash of computer (Harishankar 2006). In addition, some people have negative attitude towards emoticons except the simplest static ones.

According to different personality traits and the dual role of emoticons usage, it is expected that people who are outgoing and open to experience would be more favorable to use and receive emoticons than those who are withdrawn, conservative and cautious. Also, people who are agreeable, affable and friendly are less likely to be annoyed by undesirable emoticons than those who are aggressive, dominant and disagreeable. Moreover, since neurotic persons are reactive and more easily bothered by stimuli in the environment (Howard and Howard 1995), they are more likely to be irritated by unexpected emoticons than those who are calm, emotionally stable and optimistic. In addition, people with a high level of conscientiousness would concentrate on the goals and have more control over impulses, while people with a low level of conscientiousness are more impulsive and easier to persuade from one task to another, thus the focused people are more likely to prefer textual conversations which are clean and orderly with less emoticons. Therefore, in order to best deliver the message and the emotion and meanwhile not to annoy the partner, one would adjust his/her emoticon usage according to his/her perception of receiver's personality traits. Hence, we propose,

H3a： Perceived extroversion of the receiver is positively related to one's emoticon usage in IM communications.

H3b： Perceived agreeableness of the receiver is positively related to one's emoticon usage in IM communications.

H3c： Perceived openness of the receiver is positively related to one's emoticon usage in IM communications.

H3d： Perceived neuroticism of the receiver is negatively related to one's emoticon usage in IM communications.

H3e： Perceived conscientiousness of the receiver is negatively related to one's emoticon usage in IM communications.

Research Methodology

Instrument

The model presented in Figure 1 includes eight variables. The dependent variable, sender's emoticon usage, is measured by three items which capture the frequency and volume of emoticon usage within and across IM conversations. Task formality is measured by a six-item scale, capturing three dimensions of the task: objective, preparation and outcome. The seven-item measurement for intimacy is adapted from Riggio (2000)'s scale for sibling relationship, with an additional item developed in this study to reflect the context of IM. The five personality traits extraversion, agreeableness, conscientiousness, neuroticism, openness are measured by validated items from International Personality Item Pool (http://www.ipip.ori.org/).

A questionnaire was designed containing measures of all the concepts. The concept of task formality, intimacy, perceived receiver personality were measured using a 7-point likert scale from 1 (strongly disagree) to 7 (strongly agree). Usage was measured by statements using an 11-point scale from 1 (none of the conversations/messages) to 11 (most conversations/most messages).

The questionnaire was pretested by a small group of doctoral students. The purpose of the pretest was to confirm that all relevant items and aspects (content validity) were included in the study and to enhance the clarity and readability of the questionnaire. Scales were modified accordingly. The resulting questionnaire included 47 items measuring nine latent variables and is to be used in a pilot study which simulates the main study to a large degree.

Pilot Study

Considering the increased popularity of IM and emoticons, one population may be more affected than others: the university students. According to a survey released by the Pew Internet and American Life Project (Jones et al. 2002), university students are among the heaviest users of IM. Eighty-five percent of them consider the Internet an easy and convenient choice for communicating with friends and 72% report that most of their online communication is with friends. Hence, our proposed relationships regarding the emoticon usage in IM would be appropriately examined within this context.

A pilot study was conducted to formally examine the reliability of questionnaire items. Questionnaires were distributed to 98 undergraduate students in a major university in Southeast Asia during their class. Students completed and returned them within the same class period. We have eight different sets of questionnaires. Half of them ask respondents to recall a task-oriented talk via IM, while the other half ask for a recall of a social-emotional talk. At the beginning of the questionnaire, we asked the respondent to list four persons (A, B, C and D) on their IM contact lists. The subsequent questions measuring the level of intimacy, perceived receiver personality and emoticon usage regarding to one of the four persons provided by the respondent, as specified clearly in the questionnaire. For example, some respondents were asked to rate his/her intimacy with person A, while some others were asked the same questions with regard to person B. This is to ensure that not all respondents answer the questions based on their best friends, who are likely to come first to their mind. Otherwise, the level of intimacy will be skewed. We thus have four different sets of questionnaires for each scenario (task-oriented or social-emotional talk) in terms of the receiver specified. We also ensured that there was equal number of respondents for each set. Questions which do not involve the specific receiver are the same for all eight sets. Apart from missing data, 96 responses (98.0%) were used in the analysis, with 12 responses for each set.

Manipulation check showed the task contexts were manipulated successfully (t= 8.266, p< .001). Exploratory Factor Analysis (EFA) was then conducted to check item quality. Thirteen factors were suggested compared to eight constructs as intended. Some items intended for different constructs loaded together. This was most obvious for reverse items, whose loadings violated convergent validity. Hence, we referred back to the survey wording and removed items with low loading on intended component and items which did not load high on any component. Some reverse items were removed as they might be subjected to response error. EFA was run again and the new items loaded well on eight intended constructs. We used the reduced and refined questionnaire for the main study (Please see Appendix A for constructs and items).

Main Study

Another 120 subjects from various majors were recruited for the main study. They were asked to complete one of the eight sets of the questionnaires in a lab and paid $5 each for their participation. Six lab sessions were conducted with 20 subjects per session. Each set of questionnaires was ensured to have 15 respondents. Besides questions for interested constructs, the questionnaire also includes some questions for demographic information, such as age, gender, experience of online chat and emoticon usage.

The average age of the subjects is 23. The numbers of female and male subjects do not differ much (56:64). A check on the experience of online chat and emoticon usage shows that they chat online and use emoticons frequently, and sometimes save emoticons received from others. However, they seldom download emoticon packages themselves. The manipulation check for task formality shows that it was successful. Four sets of the questionnaires asking for recalling a task-oriented talk (M = 4.56, SD = 0.92) differ from the other four sets asking for recalling a casual talk (M = 3.16, SD = 0.97) in terms of the task formality as intended (F = 65.907, p < .001).

Data Analysis and Results

A confirmatory factor analysis using LISREL 8.51 was conducted to test the measurement model. Six fit indices were used to assess the best-fitting measurement: GFI(>=.90), NFI(>=.90), NNFI(>.90), CFI(>.90), RMSEA(<=.08), SRMR(<=.08). Table 4 shows that the model fits the data marginally well.

Reliability and convergent validity were assessed by examining: (1) Cronbach's alpha for all factors (>.70); (2) Composite reliability for all factors (>.70); (3) Average variance extracted (AVE) (>.50) (Hair et al. 1998); (4) Factor loadings (>.50, good; >.70, excellent) (Hair et al. 1998). Table 3 shows that Cronbach's alpha and composite reliability for all the constructs are higher than 0.74. AVEs are larger than the recommended 0.50. Item loadings range from 0.67 to 0.97(see Table 2), which are considered satisfactory. In addition, factor analysis extracted eight clean factors (done with SPSS, as shown in Table 2). Most of the item loadings on the corresponding construct are over 0.7, with the rest lower than 0.7 but larger than 0.55, which are still acceptable according to the prevailing criteria (Hair et al 1998; Tabachnick and Fidell 2000). Discriminant validity was examined by comparing the shared variances between factors with the AVEs of the individual factors (Fornell and Larcker 1981). Table 3 shows that the squared roots of all the AVEs are greater than the correlations among constructs. Discriminant validity is thus established.

In order to test the relationships among the constructs, structural model showed in Figure 1 was examined with LISREL. The fit indices for the structure model were acceptable (as shown in Table 4). Table 5 exhibits the path coefficients and t-value for all the hypothesized

relationships. Three hypotheses were supported (see Table 3), suggesting that: social-emotional talks, which are of lower task formality, invoke more emoticon usage than task-oriented talks, which are of higher task formality (H1, t-value=-2.07); a high level of openness of the receiver invokes more emoticon usage from the subject (H3c, t-value=2.01); a high level of conscientiousness of the receiver leads to less emoticon usage from the subject (H3e, t-value=-3.79). Other hypotheses were not supported at 0.05 level.

Table 2: Factor Analysis Results

	Component (SPSS)								LISREL	
	REL	EXT	ARG	CON	NEU	OPE	FOM	USE	Loading	t-value
REL1	**0.81**	0.18	0.11	0.01	0.11	0.14	0.07	0.03	0.86	10.33
REL2	**0.86**	0.08	0.09	0.09	0.08	0.16	0.07	0.08	0.89	10.95
REL3	**0.84**	0.18	0.15	0.05	0.01	0.10	0.07	0.01	0.85	10.08
REL4	**0.75**	0.15	0.10	0.07	0.17	0.09	0.02	0.01	0.68	7.32
REL5	**0.75**	0.13	0.13	0.26	0.14	0.14	0.01	0.05	0.74	8.15
EXT1	0.43	**0.71**	0.22	0.01	0.20	0.06	0.04	0.04	0.73	7.79
EXT2	0.35	**0.80**	0.05	0.05	0.01	0.20	0.12	0.06	0.90	10.58
EXT3	0.14	**0.83**	0.22	0.06	0.13	0.24	0.06	0.02	0.81	9.03
AGR1	0.42	0.04	**0.62**	0.16	0.12	0.24	0.25	0.07	0.80	8.91
AGR2	0.39	0.37	**0.55**	0.17	0.18	0.25	0.15	0.07	0.84	9.63
AGR3	0.39	0.24	**0.71**	0.12	0.03	0.02	0.12	0.05	0.81	9.28
CON1	0.13	0.17	0.05	**0.75**	0.08	0.09	0.12	0.20	0.67	6.29
CON2	0.09	0.05	0.15	**0.79**	0.03	0.12	0.10	0.01	0.69	6.02
CON3	0.26	0.05	0.10	**0.61**	0.03	0.33	0.32	0.21	0.82	9.22
NUE1	0.03	0.10	0.04	0.39	**0.74**	0.03	0.06	0.04	0.73	4.65
NEU2	0.01	0.04	0.29	0.01	**0.81**	0.15	0.08	0.17	0.96	8.32
NUE3	0.06	0.13	0.06	0.12	**0.84**	0.02	0.05	0.08	0.68	5.04
OPE1	0.09	0.22	0.05	0.27	0.09	**0.70**	0.09	0.03	0.70	7.01
OPE2	0.27	0.07	0.08	0.18	0.06	**0.76**	0.07	0.04	0.80	8.41
OPE3	0.16	0.09	0.09	0.03	0.04	**0.83**	0.01	0.03	0.68	6.80
FOM1	0.12	0.05	0.20	0.02	0.01	0.06	**0.84**	0.05	0.83	9.76
FOM2	0.07	0.03	0.05	0.14	0.01	0.04	**0.93**	0.03	0.97	12.86
FOM3	0.01	0.00	0.02	0.08	0.04	0.02	**0.93**	0.02	0.88	10.76
FOM4	0.11	0.13	0.04	0.16	0.05	0.16	**0.79**	0.04	0.71	7.79
USE1	0.10	0.02	0.02	0.02	0.02	0.07	0.06	**0.92**	0.87	10.94

USE2	0.12	0.12	0.06	0.11	0.07	0.01	0.02	**0.91**	0.94	7.42

Table 3: Reliability, AVE and Correlations among Latent Constructs

	CA	CR	AVE	REL	EXT	AGR	CON	NUE	OPE	FOM	USE
REL	0.89	0.87	0.63	**0.79**							
EXT	0.85	0.86	0.67	0.56	**0.82**						
AGR	0.85	0.86	0.61	0.61	0.59	**0.78**					
CON	0.77	0.75	0.51	0.37	0.21	0.20	**0.71**				
NEU	0.74	0.75	0.51	-0.07	-0.07	-0.29	-0.02	**0.72**			
OPE	0.77	0.77	0.53	0.49	0.46	0.41	0.52	-0.22	**0.73**		
FOM	0.91	0.91	0.73	0.11	0.19	0.20	0.42	0.04	0.18	**0.85**	
USE	0.90	0.88	0.71	-0.12	-0.10	-0.12	-0.22	-0.12	-0.07	0.04	**0.85**

Note: Diagonal elements are the roots of average variance extracted.

CA: Cronbach's alpha; CR: composite reliability

Table 4: Fit indices for Measurement and Structural Models

Fit indices	Measurement model	Structural model
$\chi 2$/df	379.32/271	379.32/271
GFI	0.92	0.93
NFI	0.92	0.92
NNFI	0.91	0.91
CFI	0.92	0.92
RMSEA	0.065	0.064
SRMR	0.07	0.07

Table 5: Results of Hypotheses Testing

Hypothesized Relationships	Path Coefficient	t-value	Supported?
H1: Formality-Emoticon Usage	-0.05	-2.07*	YES
H2: Relationship-Emoticon Usage	0.12	0.22	NO
H3a: Extraversion-Emoticon Usage	0.24	1.11	NO
H3b: Agreeableness-Emoticon Usage	0.06	1.87	NO
H3c: Openness-Emoticon Usage	0.20	2.01*	YES
H3d: Neuroticism-Emoticon Usage	-0.03	-1.03	NO
H3e: Conscientiousness-Emoticon Usage	-0.35	-3.79**	YES

Note: *p<.05; ** p<.01.

Discussion and Conclusions

Research on emoticon usage is relatively new in the education and entertainment field. This study examines whether task formality, interpersonal intimacy, and perceived receiver personality influence one's use of emoticons. According to the results, one will use more emoticons if the IM communication is a social-emotional talk than a task-oriented talk. This supports our prediction based on the level of emotional exchange needed in the communication and the possible influence of distraction caused by emoticons.

There is no significant relationship between the level of sender-receiver intimacy and emoticon usage during IM communication. The reason may be that in some situations when a pair of IM communicators have low intimacy, the sender wants to better convey his/her feelings to the receiver with the help of emoticons, otherwise(with plain text messages) they (i.e., feelings) may not be precisely captured by the receiver, who does not know him/her well enough. There are also situations when one wants to appear approachable to the unfamiliar people by using emoticons, just as in "meet and greet" situations.

In general, perceived receiver personality does influence one's frequency of using emoticons in IM communications. The significant positive relationship between openness and emoticon usage suggests that one would use more emoticons when he/she regards the receiver to be inventive, curious and open to new ideas and change. While the negative relationship between conscientiousness and emoticon usage shows that one would use less emoticons if he/she regards the receiver to be more goal-directed, orderly and less impulsive. However, contrary to our predictions, extroversion, agreeableness and neuroticism of the partner do not turn out to be significant predictors of emotion usage, although they tend to affect emoticon usage in the proposed directions (t=1.11, 1.87 and -1.03 for extroversion, agreeableness and neuroticism respectively). Multicolinearity does not seem to be a problem according to VIF and condition index for the seven independent variables. The insignificant effect of extroversion and agreeableness could probably be interpreted by reconsidering the feature of emoticons used in IM. For one thing, the design of emoticon involves novelty and imagination. Apart from the basic emoticons like smiley, frowney and winkey, nowadays a variety of static/animated emoticons come about, which are more elaborate in conveying diverse emotions. For another thing, the use of emoticons involves creativity and uniqueness, too. As more and more emoticons are personalized, people can assign them specific meanings and use them in specific context. Therefore, extroversion or agreeableness of the receiver may be less influential in the acceptance and use of emoticons. A more relevant aspect might be the level of openness: having broad interests, liking novelty and being liberal. For the insignificant effect of neuroticism, additional check of the use of different types of emoticons provides some explanation. Among the five categories of emoticons, namely, happy, naughty, sad, angry and love (Appan et al. 2004), "happy" emoticons are most frequently used (65%), followed by naughty (40%) and sad ones (30%). The use of love (25%) and angry (15%) emoticons has been the least frequent. It thus seems that one would not necessarily decrease emoticon usage in communications with a partner of high neuroticism, because positive emoticons (such as happy and naughty) are unlikely to cause negative reactions, but rather, they tend to give rise to positive feelings.

Limitations and Implications

Major limitations of our study include those often understood to be shortcomings of survey research, namely the accuracy of recall and inability to show causation. Relying on self-

reported data may have an unintended impact on the dependent variable. Moreover, since our study involves personality perception and the measure for personality has been regarded as highly unstable in the psychology literature, the result regarding the relationship between personality and emoticon usage should be taken with caution.

In spite of limitations, our study contributes to research and practice by presenting that emoticon usage in IM is influenced by task context and interpersonal perception. As IM and emoticons have gained increasing popularity (Avrahami and Hudson 2006), it is important to understand how and under what circumstances they facilitate human communication. Designers should consider the possible use of emoticons in various task contexts. For example, in a task-oriented communication, emoticons which help express ideas without distracting attention may be more welcome. Besides, individuals may have different orientations in using emoticons, in terms of the frequency as well as the types. Designers shall capture this user psychology by diversifying the emoticon designs to increase acceptance level of different users. The power of social contagion in using emoticons shall not be ignored as well.

As one of the few studies that investigate this area, this study has implications for future research. We have focused on one general dimension of interpersonal relationship, the level of intimacy, and the result did not show its significant impact on emoticon usage. Future study can investigate other specific dimensions of interpersonal relationship. Another area for further exploration is a comparison of IM with other online communication media in order to better understand the emoticon usage. We anticipate that the findings of IM in this study will be generalized to other text-based CMC applications such as email, BBS and chat rooms. Furthermore, with the widespread adoption of Internet technologies such as Java and Virtual Reality Modeling Language, animation has become much easier to realize and increasingly popular on the Web (Spool et al. 1999; Zhang 2000). Animated emoticon is such an example. Compared to static emoticons, they are more vivid, conveying real-life emotions in an even closer way; however, they are also larger in size and more distracting. Hence, future study can also look at how different types of emoticons (e.g., static vs animated) may affect their usage.

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Appendix A

Construct	Items
Task Formality	FOM1. I had an objective to achieve in this conversation. FOM2. The outcome of this conversation was important to me. FOM3. I had to achieve an outcome within certain time limit. FOM4. I had prepared for this conversation.
Relationship	REL1. I enjoy my relationship with him/her. REL2. I like to spend time with him/her. REL3. He/She is a good friend of mine. REL4. I know that I am one of his/her best friends. REL5. We can understand each other most of time.
Extraversion	EXT1. He/She feels comfortable around people. EXT2. He/She starts conversations. EXT3. He/She talks to a lot of different people at parties.
Agreeableness	AGR1. He/She feels others' emotions. AGR2. He/She makes people feel at ease. AGR3. He/She sympathizes with others' feelings.
Conscientiousness	CON1. He/She is exacting in his/her work. CON2. He/She follows a schedule. CON3. He/She pays attention to details.
Neuroticism	NEU1. He/She changes mood a lot. NEU2. He/She gets upset easily. NEU3. She seldom feels blue.
Openness	OPE1. He/She is full of ideas. OPE2. He/She is quick to understand things. OPE3. He/She has a vivid imagination.
Emoticon Usage	USE1. How often did you use emoticons in such conversations with person A? USE2. In one such conversation with person A, how often did you use emoticons in your messages?